MOXXI Measurements & Observations in the 21st Century
Working Group - International Association of Hydrological Sciences

IAHS AISH

WMO HydroHub

NERC SCIENCE OF THE ENVIRONMENT

Image-based non-contact flow monitoring for communities at risk

Matthew Perks, Andy Russell, Andy Large
matthew.perks@newcastle.ac.uk
@catchmentSci

Newcastle University

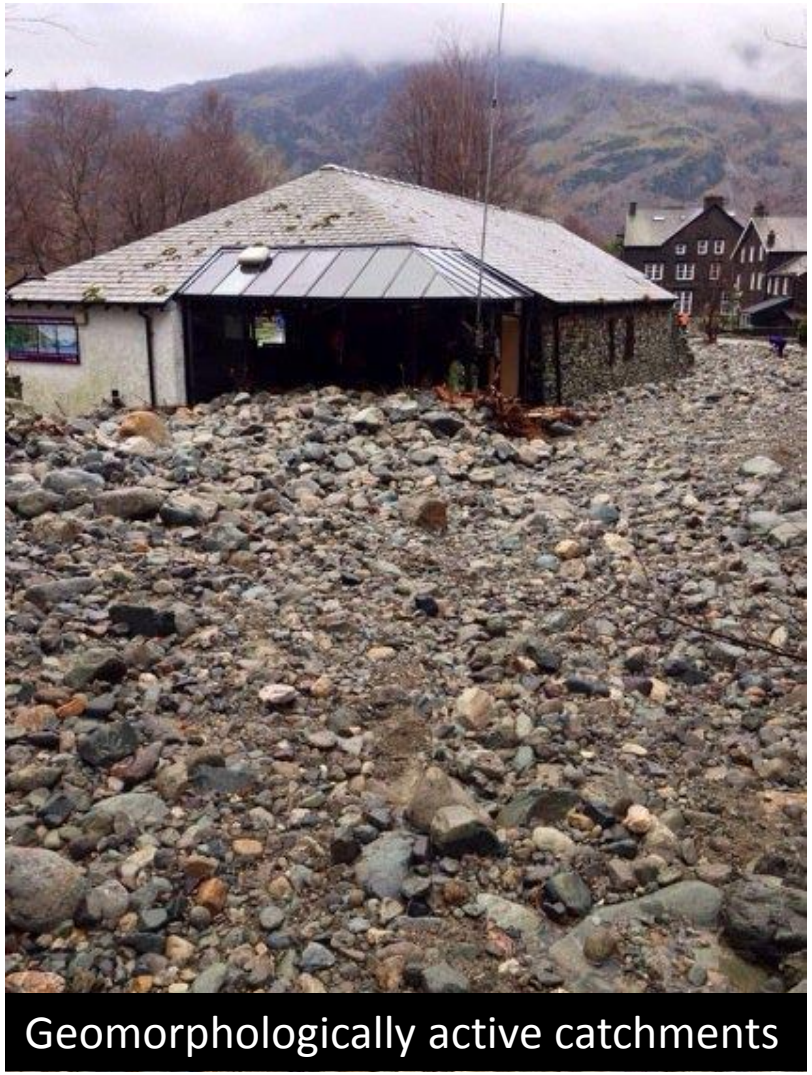
4th December 2017 Innovation in Hydrometry – from ideas to operation WMO, Geneva

UK Network: Great but not without limitations…

> 1200 active stations

Overwhelmed or topped out

Steep catchments with communities



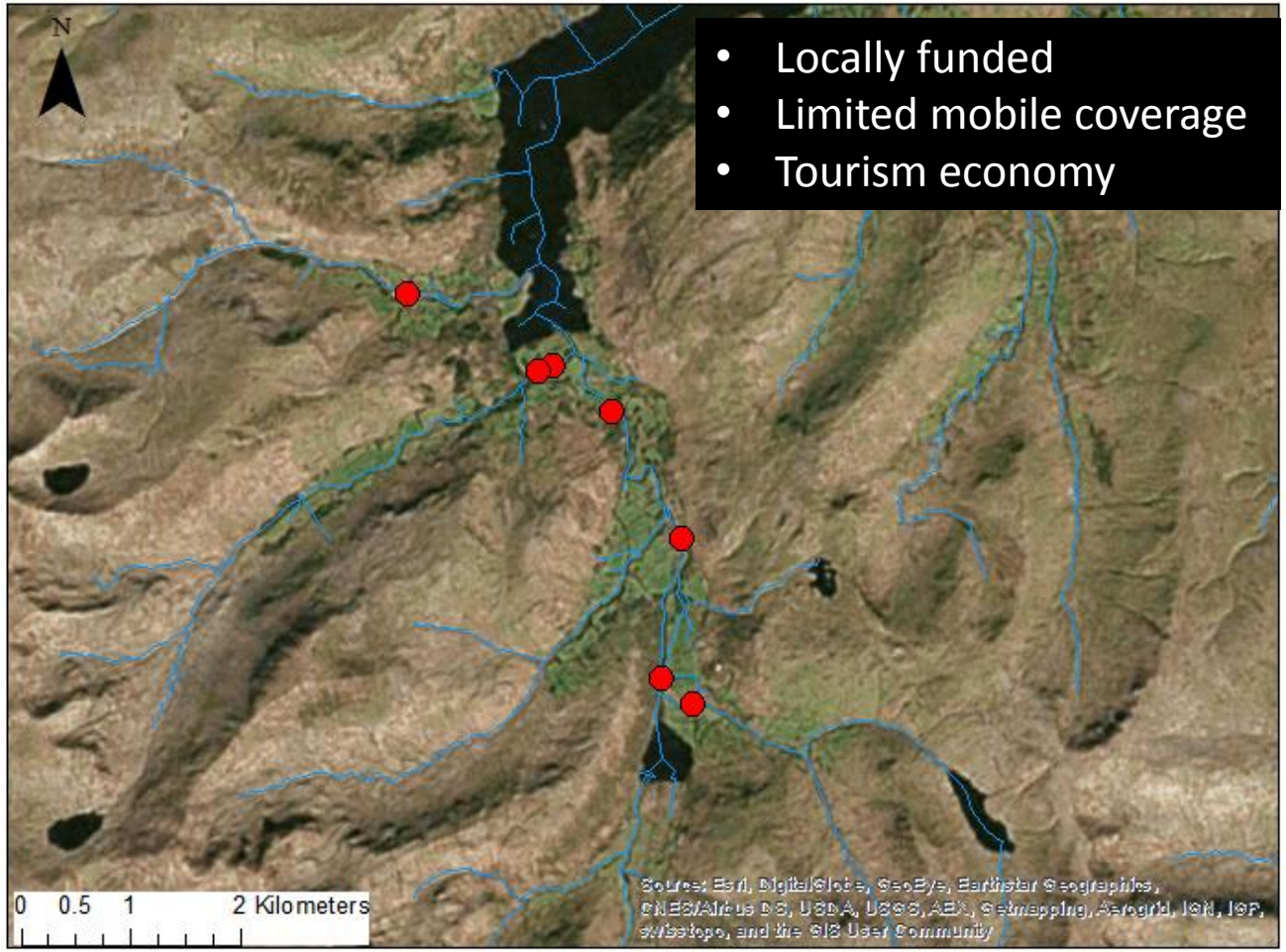
Geomorphologically active catchments

Solutions driven by local communities

Ultrasonic sensors

LSPIV

Satellite telemetry



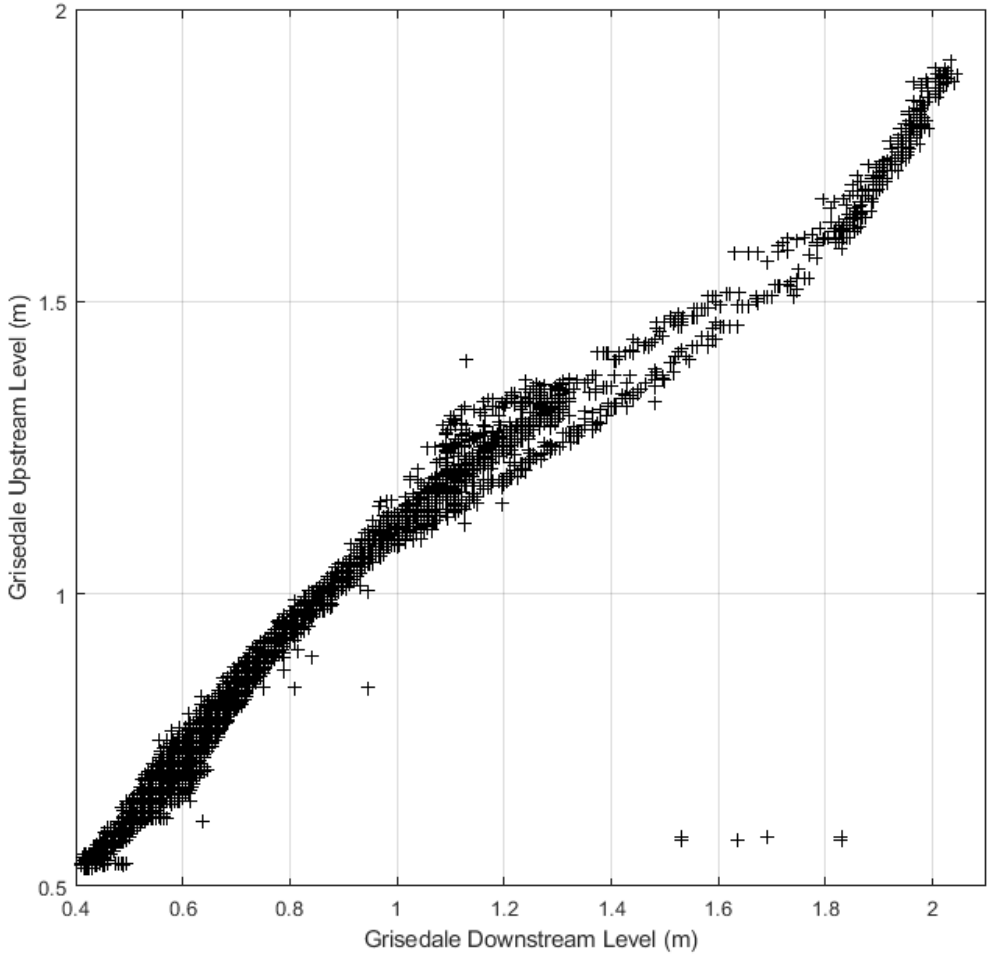
- Locally funded
- Limited mobile coverage
- Tourism economy

Some novel insights

Relationship between the upstream and downstream river levels (100 m apart) at Grisedale vary with each other for the same timestamp

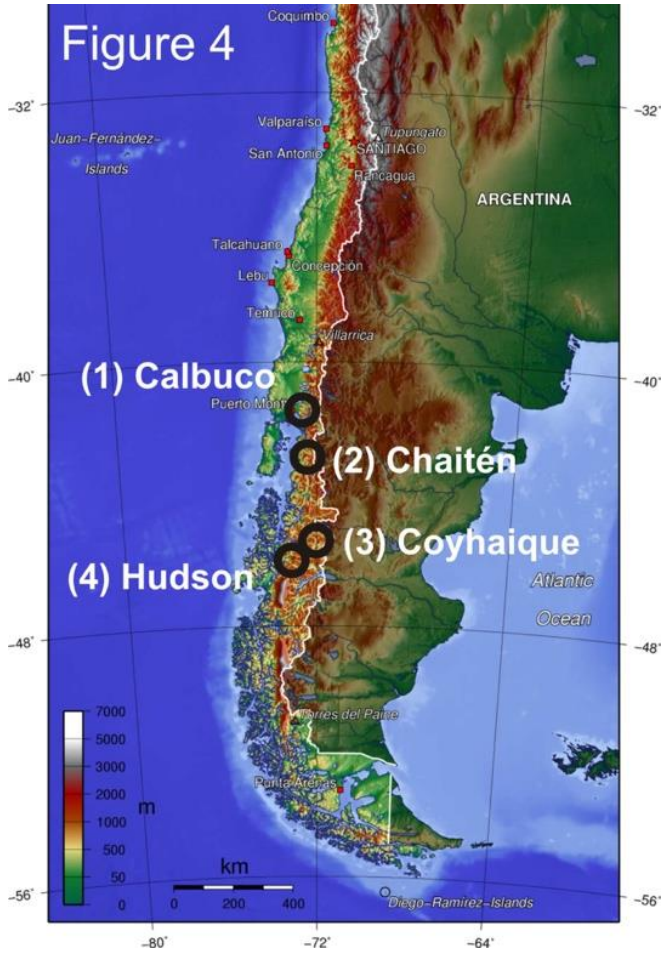
Deviations in this relationship away from the linear trend represent changes in the water surface slope

This additional water surface slope information can produce a slope-stage-discharge rating curve which takes into account the impacts of hysteresis



https://catchmentsci.github.io/Newcastle-Flood-Observatory/grizedale_policehouse.html

Application to highly dynamic systems



A range of geomorphologically-active test catchments in Chile & Peru

Better flood warnings to increase preparedness and resilience

Final thoughts

Low cost non-contact monitoring offers real opportunities for at risk communities to lead their own monitoring

Unexpected benefits e.g. community buy-in to satellite systems to ensure business resilience

Transfer of this knowledge to developing countries where networks are sparse

Application to Environment Agency test sites in England where gauging at high flows is problematic

jobs.ac.uk

Great jobs for bright people

Find a Job | Find PhDs | Careers Advice | Jobs by Email | Your Account

Newcastle University

Research Associate - B97387R

Newcastle University - Faculty of Humanities and Social Sciences - Geography, Politics & Sociology

Location:	Newcastle Upon Tyne	**Placed on:**	24th November 2017
Salary:	£29,799 to £38,833 per annum.	**Closes:**	22nd December 2017
Hours:	Full Time	**Job Ref:**	165089
Contract Type:	Permanent		

Applications are invited for a highly motivated and enthusiastic field scientist to be based in the School of Geography, Politics and Sociology. The post is tenable until 1st May 2019 from February 2018 or as soon as possible thereafter. You should be a field scientist with a PhD with a proven record of achievement in the study of fluvial systems and hydrological monitoring. You should have a creative approach to solving problems and an appropriate level of technical ability in the acquisition and analysis of hydrological field data sets from river systems.

Experience of hydrological monitoring, field survey techniques (e.g. dGPS/TLS/drones) and GIS is essential, as are excellent written and oral communication skills and the ability to work both independently and as part of a team. You will work on the NERC-funded projects 'TENDERLY (Towards END-to End flood forecasting and a tool for Real-time catchment susceptibility)' and 'Real-time low-cost monitoring for hydro-geomorphological risk reduction in Chile'.

You are invited to discuss the post informally with Professor Andy Russell at andy.russell@ncl.ac.uk 0191 208 6951.

http://www.jobs.ac.uk/job/BFY747/research-associate-b97387r/